

Notice of Allowability

Application No.

09/872,770

Examiner

Mark Ruthkosky

Applicant(s)

NARANG ET AL.

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/14/2005.
2. ☒ The allowed claim(s) is/are 1,6,11 and 12.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

MARK RUTHKOSKY
PRIMARY EXAMINER

Mark Ruthkosky 12-2-05

DETAILED ACTION

Claim Rejections - 35 USC § 103

The rejection of claims 1-3, 5-9, 11-12 and 35 under 35 U.S.C. 103(a) as being unpatentable over Kreuer et al. (US 6,264,857 and WO 98/07164), in view of Abraham et al. (US 5,219,679), and further in view of Peer (EP 337,626) has been overcome by the applicant's cancellation of the claims.

Allowable Subject Matter

Claims 1, 6, 11, and 12 are allowed.

The following is an examiner's statement of reasons for allowance:

The instant claims are to a polymer electrolyte membrane comprising a first polymer comprising acidic subunits and a second polymer comprising basic subunits, wherein the polymer membrane further comprises an elastomeric polymer comprising elastomeric subunits and wherein the basic subunits comprise vinylimidazole and wherein said second polymer comprises polyvinylimidazole and wherein said acidic subunits comprise 2-acrylonamide-2-methyl-1 propane sulfonic acid and said elastomeric subunits comprise acrylonitrile.

The prior art does not teach a polymer electrolyte membrane of the claimed materials including a second polymer comprising polyvinylimidazole, wherein said acidic subunits comprise 2-acrylonamide-2-methyl-1-propane sulfonic acid, and the elastomeric subunits comprise acrylonitrile. As such, the claims are allowable over the prior art.

The most pertinent art has been cited. Kreuer teaches a polymer electrolyte membrane comprising a first polymer comprising acidic subunits and a second polymer comprising basic subunits (cols. 1-2, for example.) The first polymer may be sulfonated polyether ketones, such as sulfonated polyetheretherketone, PEEK, with sulfonic, phosphoric and carboxylic acid groups (col. 2, lines 25-67; examples.) The basic subunits comprise polymers including vinylimidazole (col. 3, lines 40-50; examples.) The polymer electrolytes have a conductivity on the order of $\geq 10^{-3}$ S/cm (col. 4, lines 53-end; examples 1-4.) Kreuer does not teach that the polymer membrane further comprises an elastomeric polymer.

Abraham et al. (US 5,219,679) teaches the use of polyacrylonitrile (PAN) in a polymer electrolyte membrane in order to promote ionic conductivity, as the donor -CN- group of the polyacrylonitrile can complex with positive ions, such as lithium salts in an electrolyte. In addition, Peer (EP 337,626), teaches a polymer membrane comprising a blend of sulphonated polyetheretherketone and an elastomer including polyacrylonitrile (PAN.) The membranes have improved hydrophilic properties while being prepared from relatively hydrophobic polymers.

The references, alone or in combination, do not teach or suggest a polymer electrolyte membrane of a first polymer comprising acidic subunits and a second polymer comprising basic subunits, wherein the polymer membrane further comprises an elastomeric polymer comprising elastomeric subunits, wherein the basic subunits comprise vinylimidazole, wherein said second polymer comprises polyvinylimidazole, wherein said acidic subunits comprise 2-acrylonamide-2-methyl-1 propane sulfonic acid and said elastomeric subunits comprise acrylonitrile.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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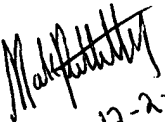
fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky
Primary Patent Examiner
Art Unit 1745


12-2-05